GENERAL SPECIFICATIONS

CITY OF MAPLE GROVE, MINNESOTA

TABLE OF CONTENTS
JANUARY 2016

TABLE OF CONTENTS

- This page left intentionally blank -

GENERAL SPECIFICATIONS

CITY OF MAPLE GROVE, MINNESOTA

1) GENERAL

The General Specification and the Special Provisions and Conditions of the Contract as embodied in these Contract Documents shall be applied to all work and materials to be furnished and installed under these specifications.

2) LOCATION

The General work and appurtenances to be constructed and installed under this contract are located in the City of Maple Grove, Hennepin County, Minnesota, as shown on the drawings.

3) SCOPE OF WORK

The work to be done under this contract shall include the furnishing of all material, labor, tools, and equipment to construct, complete in place, the general work described in connection with water main, sewers and all appurtenances as shown on the drawings and as specified herein and in accordance with all pertinent requirements include but not limited to, the Minnesota Pollution Control Agency and Minnesota Department of Health.

4) METHOD OF PROCEDURE

The Contractor shall perform work in such a manner as to cause the least interference and delay to such other work as may be in progress at the time by other Contractors. The Contractor shall notify the Engineer in writing of his/her intentions to commence work at least five (5) days prior to moving onto the site.

Prior to the start of any work, the Contractor shall submit in writing to the Engineer a schedule of procedure and shop drawing submittals.

5) COORDINATION OF WORK

The Contractor shall be responsible for the satisfactory coordination of the construction with other construction and activities in the area affected. Delays in work resulting from lack of harmony shall not in any way be a cause for extra compensation by any of the parties.

6) CONTRACTOR'S RESPONSIBILITY FOR MATERIALS

a. MATERIAL HANDLING

Pipe and accessories shall, unless directed in the special provisions, be unloaded at the point of delivery, hauled to and distributed at the site of the project. Handle with care to avoid damage.

b. MATERIAL FURNISHED BY CONTRACTOR

The Contractor shall be responsible for material furnished by him, and replace at his own expense material that is found to be defective in manufacture or that has become damaged in handling after delivery by the manufacturer. This shall include the furnishing of material and labor required for the replacement of installed material discovered defective prior to the final acceptance of the work or during the warranty period.

c. MATERIAL FURNISHED BY THE OWNER

Responsibility for material furnished by the Owner shall begin at the point of delivery by the manufacturer, or Owner, and acceptance of the material by the Contractor. Examine material furnished by the Owner at the time and place of delivery and reject defective material. The point of delivery shall be stated in the special provisions.

d. QUALITY AND WORKMANSHIP

The Owner or the Engineer may request certified lab data from the Manufacturer to verify the physical properties of the materials supplied under this specification or at his own expense may take random samples for testing by an independent laboratory.

QA Deviations – If an approved supplier must supply material that does not meet all requirements of this specification, he must notify the Engineer via a written description of the deviation with data that

shows the magnitude of the deviation, the justification for the deviation from this specification, and the worst case, long term impact of the deviation on the project. The decision to accept material deviating from this specification prior to shipment shall be the responsibility of the Engineer.

Compaction testing will be performed for the Owner by an independent testing laboratory (Northern Technologies, Inc.) The cost of passing tests will be paid by the Owner and the Contractor shall pay for all failing test and the retest.

The provisions of MnDOT 1603 and the most current version of the MnDOT Schedule of Materials Control will be the basis for all Quality Control testing performed by the Contractor as part of the Contract Work. In addition, the following testing rates and requirements will be utilized for street and utility construction work as part of Quality Assurance testing by the Owner and shall be performed by Northern Technologies Inc. (NTI). NTI can be contacted at (763) 433-9175

Bituminous Testing				
Testing Location	**Project Type**	**Sampling Responsibility**	**QA Testing Frequency**	**Reference Specification**
Mix Sampling – Field / Placement	All Projects	Owner's Testing Representative [1]	1 per day per mix design	MnDOT 2360
All Courses Below Wear – Maximum Density Specification	All Projects	Owner Marks Core Location, Contractor Performs Coring	Varies Based on Tonnage	MnDOT 2360.3.D.1
Wear Course – Ordinary Compaction	All Projects	Owner's Testing Representative [1]	Varies Based on Tonnage	MnDOT 2360.3.D.2

[1] For samples at plant and in the field, the Contractor may be requested to take companion sample for Owner's testing. Owner will provide containers for sampling.

Trench Backfill Density				
Location / Depth	**Proctor Type**	**Min % Compaction**	**QA Testing Frequency**	**Reference Specification**
Outside Road Core	Standard	95%	1 per 500' of Trench	MnDOT 2105.3
Road Core ≤ below grading grade (bottom of aggregate base)	Standard	100%	1 per 250' of Trench	MnDOT 2105.3
Road Core, > 3' below grading grade	Standard	95%	1 per 500' of Trench	MnDOT 2105.3

Select Granular / Stabilizing Aggregate / Aggregate Base					
Location / Use	**Gradation**	**Test Type**	**Min % Compaction**	**QA Compaction Testing Frequency**	**Reference Specification**
Select Granular Borrow	1 per Source	Specified Density	100%	1 per 250' of Roadway	MnDOT 2105.3
Aggregate Base	1/12,000 yd²	DCP – Penetration Index Method	See Specification	1 per 250' of roadway / trail/ sidewalk	MnDOT 2211.3
Full Depth Reclamation	1/12,000 yd²	DCP for FDR	See Specification	1 per 250' of roadway / trail / sidewalk	MnDOT 2215

7) CONSTRUCTION STAKES, ALIGNMENT AND GRADE

All work under this contract shall be constructed in accordance with lines and grades shown on the drawings and as established by the Engineer.

The Contractor shall give the Engineer 48 hour notice of the Contractor's need for the establishment of line, grades and builds. After lines, grades and builds for any part of the work have been given by the Engineer, the Contractor shall be held responsible for the proper execution of the work and to protect and preserve all survey stakes until the work is completed. The Contractor shall at his/her own expense correct any mistakes that may be caused by their unauthorized disturbances or removal.

Lay and maintain pipe to the required lines and grades, with manholes, catch basins and fittings at the required locations. The Owner will furnish one set of line, grade and build stakes for the work. It shall be the Contractor's responsibility to preserve all survey stakes from loss or displacement. The Engineer may replace stakes he deems necessary for the proper prosecution of the work. Replacements shall be at the Contractor's expense. Lay pipes to the grade shown on the contract drawings. Make no deviation from the required line or grade except with the written consent of the Engineer.

The Contractor shall remove all survey stakes and lath from the job site upon completion of the project.

8) UNDERGROUND, SURFACE AND OVERHEAD UTILITIES

a. EXISTING UTILITIES

Existing water and sewer mains, and other underground utilities, are shown on the plans by general location. The owner does not guarantee the locations as shown on the plans, and the Contractor shall be responsible for verifying the exact location of these utilities, without additional compensation. Prior to the start of any construction, the Contractor shall notify all utility companies having utilities in the project area.

It shall be the Contractor's responsibility to determine and verify the location of existing pipes, valves or other underground structures as necessary to progress with the work with no additional compensation allowed. The Engineer shall make known records available.

b. OVERHEAD UTILITIES AND OBSTRUCTIONS

The Contractor shall protect overhead utilities, poles, etc. against damages.

9) PRIVATE PROPERTY PROTECTION

Protect trees, fences, poles and other private property unless their removal is authorized; and satisfactorily restore property damage or provide adequate compensation.

10) EXCAVATION AND TRENCH PREPARATION

The trench and trench bottom should be constructed in accordance to OSHA 2226 and OSHA 1926. Trenching should also be done in accordance with ASTM-D2321 – Section 7.

a. CLASS OF BEDDING

Class B, C-1, or C-2 bedding as shown on the standard detail plate SS-14 & SS-15, shall be used as directed on the plans or specified in the special provisions. Bed PVC pipe in accordance with the specifications described below. Special bedding shall be in accordance with the special provisions.

i. POLYVINYL CHLORIDE PIPE (PVC) PIPE.

Install and bed PVC pipe in accordance with ASTM Specification D-2321, and as shown in standard plate SS-15.

ii. POLYETHYLENE PIPE

Backfill shall consist of native or select type A, B or C granular material as outlined in ASTM D-2321.

iii. ACHIEVE CLASS B CLASS BEDDING

Compacted backfill in the "pipe zone". Bed the pipe in compacted crushed rock or pea gravel placed on a flat trench bottom. The bedding shall have a minimum thickness of 1/4 the outside pipe diameter and extend halfway up the pipe barrel at the sides. Fill the remainder of the side fills and a minimum depth of twelve inches (12") over the top of the pipe with compacted granular selected material.

iv. ACHIEVE CLASS C BEDDING

Shall be achieved by bedding the pipe with care in an earth foundation formed in the trench bottom by a shaped excavation which will fit the pipe barrel with for a width of at least 50% of the outside pipe diameter. Fill the sides and area over the pipe to a minimum depth of six inches (6") above the top of the pipe with compacted normal fill material.

b. CORRECTING FAULTY GRADE

Correct part of the trench excavated below grade with approved material and thoroughly compact without additional compensation.

c. PIPE FOUNDATION IN POOR SOIL

If, in the opinion of the Contractor, the material below the pipe is too soft to adequately support the pipe, the Contractor shall immediately inform the Engineer. When the bottom at subgrade is soft and in the opinion of the Engineer or representative of the Owner, cannot adequately support the pipe, excavate a further depth and/or width and refill to pipe foundation grade with approved material and thoroughly compact to assure a firm

foundation for the pipe with extra compensation allowed as provided elsewhere in these specifications.

11) BACKFILLING

Backfilling and grading shall be performed in accordance with the provisions of MnDOT 2503 and as amended and modified herein.

Backfill excavation in trenches to the original ground surface or to grades as specified or shown on the plans. Begin the backfilling as soon as practicable after the pipe has been placed. Prior to backfilling, clean the excavation of trash, debris, organic material, and undesirable material. Backfilling shall be done as completely as possible so as to prevent after settlement. The materials shall be compacted to attain complete filling by using the best materials available for this purpose, free from boulders or stones. Depositing of the backfill shall be done so the shock of falling material will not damage the underlying materials. Complete cleanup shall proceed directly behind the backfilling to accommodate the return to normal conditions. The Contractor shall have sufficient equipment on the job to assure timely backfill and cleanup at all times. Backfill trenches every night prior to leaving job site. Trenches may be left open with appropriate protection with approval by the Engineer and Owner. The Contractor shall take full responsibility for any mishaps that might occur for non-compliance of this requirement.

When the trench excavation is within the right-of-ways of State or County, the backfilling of the trench, compaction of materials and subgrade preparation shall be done in strict accordance with the existing requirements and specifications of the State or County Highway Department at no additional compensation.

The lower portion of the trench around the pipe shall be backfilled in accordance with the requirements shown for the pipe material. Granular material, free from rocks and boulders, shall be carefully placed by hand simultaneously on both sides of the pipe to a height of at least one foot (1') above the top of the pipe when specified to completely fill all spaces under and adjacent to the pipe. Backfill shall be tamped thoroughly on each side and under the pipe as far as practicable in layers not exceeding six inches (6") in thickness. Shovel place and hand tamp the pipe bedding material to fill spaces under and adjacent to the pipe. A jumping jack is required to be used along the length of the pipe on both sides.

Succeeding layers of backfill may contain coarse materials, but shall be free from pieces of rock, frozen material, concrete, roots, blacktop chunks,

stumps, tin cans, rubbish and other similar articles whose presence in the backfill, in the opinion of the Engineer, would cause settlement of the trench, or damage to the pipe. No black dirt, loam or other unsuitable materials shall be used as backfill in the trenches lying in the paved portion of the street. Under no condition shall lumps of broken blacktop or other such material of a size larger than two inches (2") in diameter be placed in the upper one foot (1') of the finished grade.

Backfill the trench to obtain compaction, with the lift thickness as required with a maximum of one foot (1') lifts. Compact the backfill material to 95% of the standard moisture density relationship of soils (ASTM D698-70) except the top three feet (3') of the trench which shall be compacted to 100% density.

Backfilling of utilities installed down lot lines shall require material to be compacted to 100 percent of the standard moisture density relationship of soils regardless of depth.

Backfilling of trenches in the traveled portions of the streets and under the curbs shall be accomplished in one foot (1') lifts. Where there is granular soil, compaction shall be obtained in each lift using a vibratory compactor. Where there are cohesive soils, the compaction of each list shall be obtained using a sheep's foot roller. No peat or other organic soils shall be backfilled under the traveled portions of streets.

Rubber-tired equipment shall be used to backfill trenches where other equipment will damage existing bituminous surfaces or sod.

In the event that suitable, granular material is not encountered during the normal excavation of the trench or when the material encountered is determined unsuitable by the Engineer for backfilling around the pipe as required above, the Contractor shall provide and place such approved material (sand fill) as required with no additional payment made thereto. All services shall have six inches (6") of clean sand (under #4 sieve) under and on the sides and one foot (1') above before other backfilling can proceed.

Unless specified, dispose of excavated material not suitable or not required for fill material within the project limits at the Contractor's expense. If the Engineer deems there is no area in the project limits to dispose of excess material, he shall direct the Contractor to dispose of material off site in a manner subject to the provisions of the following paragraph and the Contractor will be compensated in accordance with the bid unit price in the contract.

Before dumping materials or debris on a private or public land, the Contractor must obtain from the owner of land written permission for dumping and a waiver of claims against the owner for damage to land which may result together with permits required by law for dumping. File a copy of permission, waiver of claims and permit with the Engineer before disposal is made.

The Contractor shall provide one motor grader which shall be available at the project at all times for surface maintenance. If in the opinion of the Engineer, the Contractor is not maintaining the street surfaces sufficiently with one motor grader, the Contractor shall provide additional blades at no additional compensation.

In all cases, the Contractor shall blade the roadway after the trench has been backfilled, so that it shall provide full and adequate drainage and shall be passable to traffic when required. Existing roadway material shall be adequately salvaged, stockpiled, placed and graded to cap off the backfilled areas for purposes of maintaining access and providing a drivable surface free of rutting and ponding of water. Segregating soils during these operations is a specific requirement to prevent contamination of the soils that are needed for these purposes. The Contractor shall maintain the roadway in a condition acceptable to the Engineer at all times until final acceptance of the entire work by the Owner. This work shall be considered incidental.

Additional import material needed for purposes of maintaining traffic shall only be authorized and used for the specific purpose of maintaining traffic when full and proper measures have been taken to salvage and use the existing roadway base materials and all on-site material has been exhausted. Payment for additional material shall only be upon specific approval by the Engineer and shall be included for payment under the bid item of similar material.

In addition to the blading and maintenance requirements specified under this article, the Contractor shall also be required to adequately control dust on the streets after compaction and grading when directed by the Engineer. When so directed by the Engineer, the Contractor shall provide one tank truck of adequate size with spray bar or other suitable equipment for sprinkling streets which shall be available at all times for street maintenance. If in the opinion of the Engineer, the Contractor is not maintaining adequate dust control with one tank truck, the Contractor shall provide additional tank trucks at no additional compensation.

Consider settlements greater than one inch (1") measured with a string line from one edge of the settlement to the other within the warranty period of this contract failure of the mechanical compaction and repair street surfaces, driveways, and boulevard and ditch areas at no cost to the City.

All deficiencies in the quantity of material for backfilling trenches or for filling depressions caused by settlement shall be supplied by the Contractor. Any excess material shall be hauled away and disposed of by the Contractor at no additional compensation.

12) PIPE FOUNDATIONS

The Contractor shall notify the Engineer if he encounters unstable soil not suitable for bedding of pipe. As directed by the Engineer, the Contractor shall remove unstable material and replace with improved pipe foundation material as ordered by the Engineer. The Contractor shall not be paid extra for such additional excavation, but shall be paid for as improved pipe foundation at the unit price bid. Material for improved pipe foundation shall be MnDOT Spec. 3149H coarse filter aggregate. Not less than 50 percent of the material by weight that is retained on the No. 4 sieve shall have one (1) or more crushed faces.

13) PUMPING, BAILING AND DEWATERING

The Contractor shall, at their own expense, pump, or otherwise remove any water which may exist in the trenches and shall form all dams or other work necessary for keeping the excavation clear of water during progress of the work. In case of running sand or other bad ground, the work shall proceed day and night if the Engineer so directs.

The de-watering item shall only be used for additional de-watering needs above and beyond normal construction practices as described herein. Normal construction practices include use of up to 2 pumps in the excavation in crushed rock sumps. The dewatering item shall only include the additional pumps, well points, manifolds, etc.

14) ROCK EXCAVATION

When the trench is carried through rock, the depth of excavation shall be six inches (6") below the outside barrel of the pipe, fittings, and other appurtenances for pipe of sixteen inch (16") diameter or less and shall be nine inches (9") below the outside barrel of the pipe, fittings and other appurtenances for pipe of eighteen inch (18") diameter or greater. Adequate clearance for properly jointing pipe laid in rock trenches shall be

provided at bell holes. Sand shall be backfilled and tamped to proper grade before the pipe is laid. Width of excavation shall be computed on a basis of a uniform width twelve inches (12") greater than the outside diameter of the hubs or bells of pipe.

Rock excavation shall be defined as removal of all boulders larger than 1/3 cubic yard in volume and of ledge rock, concrete, or masonry structures that require an air hammer or blasting to remove. Loose, soft or disintegrated shale or rock in its natural state, masonry or concrete which can be economically removed without air hammer or blasting shall be classified as "loose rock". No additional compensation shall be provided for excavation of this character.

15) UNFORESEEN UNDERGROUND OBSTRUCTIONS

The removal of old timber, artificial loose stone or concrete fill or other man made obstructions that hinders the normal progress of the excavation, other than utility lines, shall be classified as "Removing Unforeseen Obstructions". The removal shall be paid for at actual cost plus 15 percent, as provided in these specifications.

16) TEMPORARY BRIDGES AND CROSSINGS

The Contractor shall construct and maintain temporary bridges and crossings, complete with flaggers, wherever necessary to expedite the work or to maintain traffic. Temporary bridges or crossings shall be of ample size to safely carry the load which may come upon them as determined by the Engineer. The cost of all labor, material, tools and equipment for temporary bridges and crossings shall be borne by the Contractor, and no separate or additional payment shall be made therefore.

17) RAILROAD AND HIGHWAY CROSSINGS

The method and construction required for any work under or adjacent to railroad tracks and highways shall be in accordance with the respective railroad or highway department permit.

Before construction is started, the successful bidder shall meet with the Minnesota Department of Transportation, County Highway Department, Railroad Maintenance Engineer, the consulting Engineers and the City of Maple Grove to determine the construction procedure to be followed, methods of rerouting traffic, placing of barricades, flares, signs, flagmen, etc., and methods of preventing damage to the highway or railroad. If required by the railroad or highway department, deposit with them a

certified check in the amount specified by them to cover the required repair work.

18) QUALITY SERVICE LOCATES

This work shall consist of the Contractor providing survey quality XYZ locates of all sanitary manhole castings, sanitary services, storm structure castings, sanitary/storm inverts, sump drain services, clean out locations, gate valve boxes, curb stops, corporations, hydrants, lighting units and hand holes, and each end of each abandoned pipe prior to backfilling operations with the intent being that the locations can be inserted into the City of Maple Grove coordinate system for ease of relocation if so required.

Survey shots must be taken at the following locations:

- Center of all castings and inlets.
- Center of each gate valve box
- Center of curb stops
- Center of corporation
- Top nut on hydrant
- Center of isolation gate valve box at hydrant
- Center of cleanouts on sump drain and sanitary sewer
- Center of sump drain service stub
- Center of hand hole
- Adjacent to lighting unit
- Center of Lift Station

Horizontal and vertical control will be provided by the Engineer.

All X, Y, Z, coordinates must be within 0.05 foot tolerance for horizontal and vertical measurements.

The Contractor shall provide a spreadsheet with the information in the following column headings:

ii. Address
iii. Item Located
iv. X Coordinate
v. Y Coordinate
vi. Z Elevation

The contractor will only be required to take shots of any utility they installed or altered in any way. The rest of the shots will be done by the Owner.

19) RESTORATION OF GROUND AND ROAD SURFACES

Wherever the surface of the ground is removed or disturbed by the Contractor's operation the Contractor shall restore, replace or rebuild all such surfaces to a condition at least equal to its condition at time of removal. Maintenance of streets and traffic shall comply with Article 5 "Maintenance of Traffic", Maple Grove Specifications for Plant Mixed Bituminous Construction and with Article 17 hereinbefore.

20) WORKMANSHIP AND CLEANUP

Upon completion of the contract, the Contractor shall dismantle and remove all construction plant, equipment, appliances, barricades and surplus materials; shall clean all streets or other services used by the Contractor; and shall do such incidental work as may be necessary to leave the work or any premises occupied by the Contractor in a neat workable condition. This work shall be done with a minimum of inconvenience to the public or public travel.

When defective work on utilities; water main, storm and sanitary that is a danger to the public's well-being or health has been noticed, the Contractor has 4 hours to respond to the Engineer with detailed information on how and when they are going to fix the defective work. If the contractor does not repair the defective work within 24 hours of written or verbal notice, the City has the right to repair and bill the contractor for the work. If the City deems the defective work a public hazard, the City has the right to immediately repair the defective work and bill the contractor.

21) METHODS OF MEASUREMENT AND PAYMENT

a. IMPROVED PIPE FOUNDATION MATERIAL

Material used for refilling to pipe foundation grade to assure firm foundation for pipe shall be paid for at the contract unit price per linear foot along the pipe in six (6) inch depth increments installed regardless of width. No foundation material will be paid for that is installed without the knowledge or consent of the Engineer nor will payment be made for rock installed only for dewatering purposes. Payment shall include cost of excavation and placement.

b. ROCK EXCAVATION

Rock excavation shall be measured by volume in cubic yards and shall be measured from the top of the rock to a point below and on each side of the outside barrel of the pipe as specified and shall be paid for in accordance with MnDOT Specification 2451.

c. QUALITY SERVICE LOCATES

There will be no measurement for Quality Service Locates. Payment shall be on a lump sum basis, based on a percent complete of the project and shall include all labor and equipment associated with gathering and tabulating quality service locates for water main, sanitary sewer, and storm sewer required items.

[END OF GENERAL SPECIFICATIONS]